

Message Text

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ACTION ERDA-07

INFO OCT-01 ARA-14 ISO-00 EB-08 OES-07 FEA-01 AID-05
CEA-01 CIAE-00 COME-00 DODE-00 FPC-01 H-02 INR-07
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SUBJ: INTERNATIONAL APPLICATIONS OF GEOTHERMAL ENERGY

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1. AT PRESENT, CHILE HAS NO INSTALLED GEOTHERMAL PLANT PRODUCING ELECTRICITY NOR HAVING OTHER THERMAL APPLICATIONS. THERE ARE, HOWEVER, TWO FEASIBILITY STUDIES UNDERWAY FOR UTILIZATION OF KNOWN GEOTHERMAL RESOURCES AND A FURTHER PLAN FOR CONDUCTING A NATIONWIDE INVENTORY OF GEOTHERMAL POTENTIAL.

2. THE FIRST AREA SCHEDULED FOR EXPLOITATION IS THE SITE KNOWN AS THE GEYSERS OF EL TATIO (2225DEGREE S 6800DEGREE W). EL TATIO IS SITUATED APROXIMATELY 60 AIR MILES FROM CHUQUICAMATA, THE WORLD'S LARGEST OPEN-PIT COPPER MINE. THREE WELLS HAVE ALRAADY BEEN DRILLED HERE AND ARE READY FOR CONNECTION TO A PROPOSED ELECTRIC POWER PLANT WITH A 30 MW CAPACITY. PRELIMINARY ENGINEERING STUDIES FOR THIS PLANT ARE SCHEDULED TO BE COMPLETED IN LATE AUGUST 1977. THE GENERAL DESIGN OF THE PLANT AND ITS TRANSMISSION LINES, PREPARATIONS FOR INTERNATIONAL BIDDING FOR CONSTRUCTION OF THE PLANT, AND NECESSARY PAPER WORK ARE SLATED FOR COMPLETION IN OCTOBER 1977. ACTUAL BIDDING AND SELECTION OF CONTRACTORS WILL BE DONE IN DECEMBER
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1977. PLANT CONSTRUCTION SHOULD START BETWEEN JANUARY AND APRIL 1978, AND IS EXPECTED TO COME ON-LINE IN APRIL 1981. ESTIMATED COST OF THE 30 MW PLANT IS US\$25,000,000. EL TATIO HAS A MAXIMUM POTENTIAL OF 100 MW BUT AS YET THERE IS NO TIME-TABLE NOR ESTIMATION OF COSTS FOR BRINGING THE PLANT UP TO ITS MAXIMUM CAPACITY. AN ACCESS ROAD, WHICH IS TO BE BUILT IN 1978, WILL COST US\$80,000. REDRILLING OF THREE WELLS TO BE USED AS RESERVES FOR THE PLANT WILL

COST APPROXIMATELY US\$300,000. IT IS ESTIMATED THAT THE FIRST-PHASE 30 MW EL TATIO PLANT WILL PROVIDE 1/3 OF THE POWER CONSUMED AT CHUQUICAMATA AND MAY SAVE AS MUCH AS US\$7,000,000 ANNUALLY IN PETROLEUM COSTS.

3. THE SECOND AREA OF INTEREST IS PUCHULDIZA (1925DEGREE S 6900DEGREE W)

LOCATED IN THE ALTIPLANO NORTHEAST OF IQUIQUE. STUDIES OF THIS AREA WILL BE ON-GOING THROUGH 1977-78. PRELIMINARY INDICATIONS ARE THAT THE AREA MAY HAVE A POTENTIAL OF 120 MW ELECTRICITY. PLANS FOR MINING DEVELOPMENT IN THIS AREA ARE AWAITING THE POSSIBLE CONSTRUCTION OF A GEOTHERMAL ELECTRIC PLANT AT PUCHULDIZA. FIVE EXPLORATORY WELLS WILL HAVE BEEN DRILLED BY NOVEMBER 1977, AND MEASUREMENT AND ANALYSIS OF THE VAPOR FROM THESE WELLS COMPLETED BY DECEMBER 1977. A FEASIBILITY STUDY FOR A POWER PLANT SHOULD BE COMPLETED BY 1978.

4. A NATION-WIDE SURVEY OF GEOTHERMAL RESOURCES WILL BE INITIATED IN 1978 IN AN EFFORT TO LOCATE OTHER POTENTIAL AREAS FOR EXPLOITATION. COSTS FOR THE STUDY WILL BE ON THE ORDER OF US\$400,000. THERE ARE AT LEAST FOURTEEN AREAS, INCLUDING EL TATIO AND PUCHULDIZA, OF KNOWN GEOTHERMAL ACTIVITY IN THE CHILEAN ALTIPLANO BETWEEN ARICA AND ANTOFAGASTA. THESE ARE DESERT AREAS WHERE HYDRO-ELECTRIC POTENTIAL IS NON-EXISTENT. HERETOFORE, LOCAL MINING ENTERPRISES AND POPULATION CENTERS HAVE HAD TO DEPEND ON PETROLEUM-FIRED GENERATORS FOR ENERGY REQUIREMENTS. THIS HAS HAD AN AGGRAVATING UNCLASSIFIED

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EFFECT ON BALANCE OF PAYMENTS IN CHILE AND HAS CONTRIBUTED TO OPERATING COSTS FOR MINES. OBVIOUSLY, DEVELOPMENT OF GEOTHERMAL RESOURCES IN THE NORTH WOULD HELP CHILE MAINTAIN A FAVORABLE BALANCE OF PAYMENTS AND REDUCE MINING COSTS. THE ALTERNATIVE FOR MEETING CHEAP ENERGY AND DESALINIZATION NEEDS IN THE NORTH, FROM THE CHILEAN POINT-OF VIEW, IS NUCLEAR ENERGY.

5. RESPONSIBILITY FOR THE DEVELOPMENT OF GEOTHERMAL ENERGY IN CHILE RESTS WITH A COMMITTEE (COMMITTEE FOR UTILIZING GEOTHERMAL ENERGY) WITHIN THE STATE CORPORATION FOR FOMENTING PRODUCTION (CORFO). THE EXECUTIVE SECRETARY OF THIS COMMITTEE IS SENOR JORGE DE LA FUENTE. THE COMMITTEE WAS FORMED IN 1967, AND ITS ACTIVITIES HAVE BEEN FUNDED BY THE CHILEAN GOVERNMENT. IN ADDITION, THE UNITED NATIONS DEVELOPMENT PROGRAM (UNDP) HAS PROVIDED US\$2,289,681 FOR FEASIBILITY STUDIES AND DRILLING AT THE EL TATIO PROJECT BETWEEN 1970 -AND 1975. JAPAN HAS ALSO OFFERED SOME ASSISTANCE IN THE FORM OF STUDY GRANTS. FURTHER FINANCING FROM INTERNATIONAL SOURCES IS CONSIDERED ABSOLUTELY ESSENTIAL FOR THE DEVELOPMENT OF GEOTHERMAL ENERGY IN CHILE.

6. SALINE GEOTHERMAL RESOURCES, AT LEAST AT THE EL TATIO SITE, REPRESENTS SOMETHING OF A TECHNICAL PROBLEM. WELLS DRILLED AT EL

TATIO HAVE A LIFE EXPECTANCY OF 20 YEARS BEFORE DRYING UP. IT IS
NOT A PROBLEM, HOWEVER, SO LONG AS THE PLANT CAPACITY DOES NOT
EXCEED 30 MW. THE FIELD IS EXTENSIVE ENOUGH TO PERMIT DRILLING
OF OTHER WELLS AS SOON AS EXISTING WELLS GO DRY DUE TO SALINIZATION.
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